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WHAT IS CLAIMED IS:

1                    1.        A die seal structure for a semiconductor die having a substrate  
2 comprising:  
3                    an elongate region electrically isolated from the remainder of the substrate  
4 extending around a major portion of the periphery of the substrate and having a gap  
5 between ends of the elongate region along a minor portion of the periphery; and  
6                    a conductive seal ring extending around the entire periphery of the die in  
7 contact with the die at said elongate region and said gap to provide a limited electrical  
8 connection between the ring and the substrate at said gap.

1                    2.        The structure of claim 1 wherein the substrate has a first  
2 conductivity type, and wherein the elongate region comprises an elongate well region of a  
3 second conductivity type different from the conductivity of the first conductivity type.

1                    3.        The structure of claim 2 wherein the first conductivity type is p-  
2 type and the second conductivity type is n-type.

1                    4.        The structure of claim 2 wherein the first conductivity type is n-  
2 type and the second conductivity type is p-type.

1                    5.        The structure of claim 1 wherein the elongate region comprises an  
2 elongate dielectric region between the seal ring and the substrate.

1                    6.        The structure of claim 1 wherein the seal ring only electrically  
2 contacts the substrate of the semiconductor die at the gap.

1                    7.        The structure of claim 1 wherein the substrate is formed of silicon.

1                    8.        The structure of claim 1 wherein the conductive seal ring  
2 comprises a multilayer structure of alternating conducting and insulating layers, and  
3 wherein vias are formed in the insulating layers.

1                    9.        A method of sealing a semiconductor die having a substrate of a  
2 first conductivity type, comprising:  
3                    forming an elongate well region of a second conductivity type opposite  
4 from the first conductivity type extending around a major portion of the periphery of the

5 substrate and having a gap between ends of the well region at a minor portion of the  
6 periphery; and  
7 placing a conductive seal ring extending around the entire periphery of the  
8 die in contact with said well region and said gap to provide limited electrical contact  
9 between the ring and the substrate of said first conductivity type at said gap.

1 10. The method of claim 9 wherein the substrate of the semiconductor  
2 die has an n-type conductivity and wherein said forming an elongate well region of a  
3 second conductivity type step includes forming an elongate well region of a p-type  
4 conductivity.

1 11. The method of claim 9 wherein the substrate of the semiconductor  
2 die an n-type conductivity and wherein said forming an elongate well region of a second  
3 conductivity type step includes forming an elongate well region of a p-type conductivity.

1 12. The method of claim 9 wherein the substrate of the semiconductor  
2 die is formed of silicon.

1 13. The method of claim 9 wherein said placing step includes  
2 sequentially forming a multiplicity of alternating conductive and insulative layers  
3 overlying one another, and forming vias in the insulating layers.

1 14. A die seal structure for a semiconductor die having a substrate of a  
2 first conductivity type, comprising:  
3 an elongate well region of a second conductivity type opposite from the  
4 first conductivity type extending around a major portion of the periphery of the substrate  
5 and having a gap between the ends of the elongate region along a minor portion of the  
6 periphery; and  
7 a conductive seal ring extending around the entire periphery of the die in  
8 contact with the die at said elongate well region and said gap to provide a limited  
9 electrical connection between the ring and the substrate of said first conductivity type at  
10 said gap.

1 15. The structure of claim 14 wherein the first conductivity type is  
2 p-type and the second conductivity type is n-type.

1                   16.     The structure of claim 14 wherein the first conductivity type is n  
2     type and the second conductivity type is p type.

1                   17.     The structure of claim 14 wherein the conductive seal ring  
2     comprises a multilayer structure of alternating conducting and insulating layers, and  
3     wherein vias are formed in the insulating layers.

1                   18.     A semiconductor device comprising:  
2                   a.     a die including a substrate;  
3                   b.     a die seal structure on the substrate, the structure comprising:  
4                         an elongate region electrically isolated from the remainder of the  
5     substrate extending around a major portion of the periphery of the substrate and having a  
6     gap between ends of the elongate region along a minor portion of the periphery; and  
7                         a conductive seal ring extending around the entire periphery of the die in  
8     contact with the die at said elongate region and said gap to provide a limited electrical  
9     connection between the ring and the substrate at said gap.

1                   19.     The structure of claim 18 wherein the substrate has a first  
2     conductivity type, and wherein the elongate region comprises an elongate well region of a  
3     second conductivity type different from the conductivity of the first conductivity type.

1                   20.     The structure of claim 18 wherein the first conductivity type is p-  
2     type and the second conductivity type is n-type.

1                   21.     The structure of claim 18 wherein the first conductivity type is n-  
2     type and the second conductivity type is p-type.

1                   22.     The structure of claim 18 wherein the elongate region comprises an  
2     elongate dielectric region between the seal ring and the substrate.

1                   23.     The structure of claim 18 wherein the seal ring only electrically  
2     contacts the substrate of the semiconductor die at the gap.

1                   24.     The structure of claim 18 wherein the substrate is formed of  
2     silicon.

1                    25.     The structure of claim 18 wherein the conductive seal ring  
2 comprises a multilayer structure of alternating conducting and insulating layers, and  
3 wherein vias are formed in the insulating layers.

1                    26.     The structure of claim 18 wherein the elongate region is isolated by  
2 oxide.

1                    27.     The structure of claim 26 wherein the conductive seal ring is  
2 connected to the substrate by a metal stub.

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